

In the Claims

1. – 45. (cancelled)

46. (new) A system for operating an electric motor having a field winding and a commutating armature in an operating mode and a braking mode, comprising:

the commutating armature electrically connected on a first side to a supply voltage and on a second side to a first side of the field winding;

the field winding electrically connected on a second side to a first side of a first triac;

said first triac electrically connected on a second side to the supply voltage;
a first controller, electrically connected to said first triac for controlling said first triac;

a first diode, a second triac and a second diode;

said first diode having an anode electrically connected to the first side of the commutating armature;

said second triac electrically connected on a first side to the second side of the commutating armature;

said second diode having an anode electrically connected to the second side of the field winding;

said first and second diodes having respective cathodes electrically connected to each other and electrically connected to a second side of said second triac; and

a second controller, electrically connected to said second triac for controlling said second triac.

47. (new) The system according to Claim 46 wherein said first controller is a current controller.

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48. (new) The system according to Claim 46 wherein said second controller is a pulse duration modulation controller.

49. (new) The system according to Claim 46 further comprising:

a third diode and a field effect transistor;

said third diode having an anode electrically connected to the anode of said second diode and a cathode electrically connected to a source of said field effect transistor;

said field effect transistor having a drain electrically connected to the supply voltage and a gate electrically connected to said second controller.

50. (new) The system according to Claim 46 wherein the field winding comprises two field windings in series.

51. (new) A system for operating an electric motor having at least two field windings and a commutating armature in an operating mode and a braking mode, comprising:

the first field winding electrically connected on a first side to a supply voltage and on a second side to a first side of the commutating armature;

the commutating armature electrically connected on a second side to a first side of the second field winding;

the second field winding electrically connected on a second side to a first side of a first triac

said first triac electrically connected on a second side to the supply voltage;

a first controller, electrically connected to said first triac for controlling said first triac;

a first diode, a second triac and a second diode;

said first diode having an cathode electrically connected to the first side of the first field winding;

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said second triac electrically connected on a first side to the second side of the first field winding;

said second diode having an cathode electrically connected to the second side of the commutating armature;

said first and second diodes having respective anodes electrically connected to each other and electrically connected to a second side of said second triac; and

a second controller, electrically connected to said second triac for controlling said second triac.

52. (new) The system according to Claim 51 wherein said first controller is a current controller.

53. (new) The system according to Claim 51 wherein said second controller is a pulse duration modulation controller.

54. (new) The system according to Claim 51 further comprising:

----- a third diode and a field-effect transistor; -----

said third diode having an anode electrically connected to the anode of said second diode and a cathode electrically connected to a source of said field effect transistor;

said field effect transistor having a drain electrically connected to the supply voltage and a gate electrically connected to said second controller.

55. (new) A system for operating an electric motor having a field winding and a commutating armature in an operating mode and a braking mode, comprising:

said at least one field winding electrically connected in series with said commutating armature;

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a first triac electrically connected in series with said at least one field winding and said commutating armature, said first triac electrically connecting said armature and said field winding with a supply voltage when in the operating mode;

a first controller, electrically connected to said first triac for controlling the operation of said first triac;

a second triac, electrically connected to a connection point between the commutating armature and the field winding, said second triac electrically connecting said field winding to said supply voltage for externally exciting said field winding by means of said supply voltage while bypassing said armature;

a second controller configured as a pulse duration modulator, electrically connected to said second triac for controlling the operation of said second triac;

a diode, electrically connected across said field winding, said diode limiting the voltage across said field winding when in the braking mode.

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